

## ABSTRACT OF THE DISCLOSURE

A first aspect of the free-cutting tool steel of the present invention contains Ti and/or Zr so that  $W_{Ti} + 0.52 W_{Zr}$  amounts to 0.03 to 3.5 wt%, where  $W_{Ti}$  represents Ti content (wt%) and  $W_{Zr}$  represents Zr content (wt%). It also contains at least any one element selected from S, Se and Te so that  $W_S + 0.4W_{Se} + 0.25W_{Te}$  amounts to 0.01 to 1.0 wt%, and so that  $(W_{Ti} + 0.52W_{Zr}) / (W_S + 0.4W_{Se} + 0.25W_{Te})$  amounts to 1 to 4, where  $W_S$  represents S content (wt%),  $W_{Se}$  represents Se content (wt%) and  $W_{Te}$  represents Te content (wt%). The tool steel also has dispersed in a texture thereof a machinability improving compound phase within a range from 0.1 to 10% in terms of area ratio in a section, wherein such machinability improving compound phase has a metallic element component having Ti and/or Zr as major components, and a binding component for such metallic element component essentially containing C and also containing any one of S, Se and Te. A second aspect of the free-cutting tool steel of the present invention contains Fe as a major component and C in an amount of 0.001 to 0.6 wt%; and further containing Ni in an amount of 6 wt% or less, Cu in an amount of 5 wt% or less, and Al in an amount of 3 wt% or less. It also contains Ti and/or Zr so that  $X$  (wt%) =  $W_{Ti} + 0.52W_{Zr}$  amounts to 0.03 to 3.5 wt%, where  $W_{Ti}$  represents Ti content (wt%) and  $W_{Zr}$  represents Zr content (wt%); and at least any one of S, Se and Te so that  $Y$  (wt%) =  $W_S + 0.4W_{Se} + 0.25W_{Te}$  amounts to 0.01 to 1.0 wt%, where  $W_S$  represents S content

(wt%),  $W_{Se}$  represents Se content (wt%) and  $W_{Te}$  represents Te content (wt%). The tool steel further has dispersed in a texture thereof a machinability improving compound phase; where such machinability improving compound phase comprises

5 a metallic element component having Ti and/or Zr as major components, and a binding component for such metallic element component essentially containing C and also containing any one of S, Se and Te. The tool steel of either aspect has an excellent machinability, and is less

10 causative of anisotropy in mechanical properties, particularly in toughness, depending on forging-and-rolling direction.